Matrices – 2021 O Level Math D

1. Nov/2021/Paper_11/No.24

(a) $\mathbf{A} = \begin{pmatrix} -6 & 2 \\ 1 & 4 \end{pmatrix}$

Find $\mathbf{A}^2$.

( ) [2]

(b) $\mathbf{B} = \begin{pmatrix} x & -5 \\ 2 & -3 \end{pmatrix}$

Find the value of x when $|\mathbf{B}| = -2$.

$x =$ ..... [2]

2. Nov/2021/Paper_12/No.20

Find.

$$\begin{pmatrix} 3 & -2 \\ 1 & 2 \end{pmatrix}^{-1}$$

$\left(\qquad\qquad\right)$ [2]

3. June/2021/Paper_11/No.24

(a) $\mathbf{M} = \begin{pmatrix} 5 & 1 \\ 2 & 3 \end{pmatrix}$ $\mathbf{N} = \begin{pmatrix} 4 & -2 \\ 3 & 0 \end{pmatrix}$

Find $\mathbf{M} - \mathbf{N}$.

( ) [1]

(b) $\mathbf{P} = \begin{pmatrix} 2 & 4 \\ c & -5 \end{pmatrix}$ $\mathbf{Q} = \begin{pmatrix} 3 & 2 \\ -2 & d \end{pmatrix}$ $\mathbf{PQ} = \begin{pmatrix} -2 & 0 \\ 19 & 11 \end{pmatrix}$

Find the value of c and the value of d.

$c =$ .....

$d =$ ..... [2]

4. June/2021/Paper_12/No.19

On Monday, 40 adults and 20 children visit a museum.
On Tuesday, 30 adults and 35 children visit the museum.
The cost of an adult ticket is \$2.50 and the cost of a child ticket is \$2.

This information can be represented by the matrices **M** and **N**.

$$\mathbf{M} = \begin{pmatrix} 40 & 20 \\ 30 & 35 \end{pmatrix} \qquad \mathbf{N} = \begin{pmatrix} 2.50 \\ 2 \end{pmatrix}$$

(a) (i) Work out **MN**.

MN = [2]

(ii) Explain what the numbers in your answer to **part (a)(i)** represent.

.....

..... [1]

(b) The museum increases the cost of tickets by 10%.

Complete matrix **P** to show the new ticket costs.

$$\mathbf{P} = \begin{pmatrix} & \\ & \end{pmatrix}$$ [2]